Frequently Asked Questions[1]
T45: SR-169 Widening from SE 253rd Pl to SE 260th St

1) Who is leading the project and where will funding come from?

The City is leading the project, working in cooperation with WSDOT, Tahoma School District (TSD), King County Metro, Puget Sound Regional Fire Authority, homeowner associations, individual property owners, and other stakeholders. WSDOT needs to approve the design alternative and final design as SR-169 is a State Highway.

The City is currently trying to procure different grants from both a State and Federal level. The City has to provide the funds to make up for any gaps in funding.

2) What are the overall goals of the project?

A public meeting was held by the City and WSDOT for the project in Fall 2019 to solicit feedback from the community on the priorities/goals of the project. A "dot chart" was finalized to summarize the feedback from the community. The main priorities/goals are:

- Improve ingress/egress at SE 253rd Pl and SE 260th St side streets.
- Reduce congestion on SR-169 and Rock Creek Elementary School/Farmer's Market.
- Improve the safety of the corridor by implementing right-in and right-out access and reducing vehicle speeds
- Provide more sidewalk and bike lanes to make the corridor more accessible to other transportation modes.
- Improve pedestrian safety crossing SR-169

3) What are the plans to continue the widening of SR-169 further north?

The City's T36 project seeks to widen SR-169 from SE 240th St to SE 244th St. This project was on hold due to the pandemic and limited resources, but the design process is anticipated to begin again in Q4 of 2022.

4) What will traffic control look like? Will the road be closed down? How would I get through SR-169 during construction?

It is currently unknown what traffic control will look like, but we will be sure to advertise any road or lane closures ahead of construction. We will do our best to maintain open lanes. We will also ensure access to side streets and businesses remain open.

[1] includes questions and comments from the August 30th public open house

5) What is the project timeline?

If funding is secured without complications, construction will likely begin around Q1 of 2024. We estimate the entire project may take 2 years, but the majority of the roadway construction can likely be completed in 1 year.

6) Why were roundabouts the selected design? Were traffic lights under consideration?

A lot of analysis and evaluation went into the preferred design alternative using roundabouts. Roundabouts are the preferred intersection alternative for WSDOT, and we need to evaluate a roundabout intersection as part of any project that requires intersection improvements. Roundabouts are commonly used in the greater King County area, around the State, the country, and globally.

There are some significant advantages to roundabouts:

- Roundabouts have an engineered physical design to reduce speed and minimize traffic movement conflicts at an intersection. They reduce severe and high-speed accidents such as left turn and T-bone collisions.
- In general, roundabouts provide higher traffic capacity than traffic signals (even with Intelligent Traffic Signals) as roundabout intersections would allow continuous traffic flow on SR 169 without stopping (except for pedestrian crossing) while still allowing side street traffic to enter the intersection with minimum delays.
- In this instance, a roundabout would be able to provide for a school bus to make a U-turn using less space than a traffic signal. This is important for the school district and school buses to have greater flexibility in their movements.
- Roundabouts would help improve access management and traffic safety along this stretch of highway by eliminating left-turn movements and providing U-turns at intersections.

For the T45 project, we considered three different alternatives for analyses:

- Alternative A – Roundabouts at SE 253rd Pl and SE 260th St
- Alternative B – Two-way stops or signal lights at SE 253rd Pl and SE 260th St
- Alternative C – Two-way stops or signal lights at SE 253rd Pl and SE 260th St, and a roundabout at the entrance into Rock Creek Elementary School

Each of the three alternatives also included widening SR-169 from two lanes to four lanes, access improvements for Rock Creek Elementary School, and raised/separated sidewalks/bike lanes.

For each alternative, we evaluated many factors, including existing traffic counts/ future traffic projections, signal warrant analysis, and level of service (LOS) standards.

- Traffic counts/projections allow us to understand the current traffic volumes entering and exiting an intersection or stretch of road and estimate future traffic volumes accounting for growth and development.
    - Traffic counts were collected in the fall of 2019 prior to the pandemic at both SE 253rd Pl and SE 260th St intersections, and in front of Rock Creek Elementary School. The City also conducted traffic counts in the spring of 2022, before

Spring Break, at the same locations, to verify if traffic volumes had changed significantly.
    - Where applicable, the more conservative traffic counts were used between the two counts (if 2019 data was higher, we used 2019, if 2022 data was higher, we used 2022).
- Signal warrant analysis assesses whether a signal light is warranted for each intersection. WSDOT follows the Manual on Uniform Traffic Control Devices (MUTCD) Warrant System (MUTCD Section 4C) to determine if a traffic signal can be considered at an intersection. If the intersection does not meet at least one of the warrants as part of the analysis, the intersection does not meet the signal warrants and signal lights cannot be implemented.
- Level of Service (LOS) standards are defined by the Highway Capacity Manual (HCM), which is a guidance document used in WSDOT's design procedures. LOS is used to determine the effectiveness of a roadway network.
    - LOS assigns a rank (A - F) to road sections based on traffic flow and corresponding safe driving conditions. The current LOS for each of the SE 253rd Pl and SE 260th St intersections is "F". LOS for a roundabout is determined by the amount of delay experienced by a vehicle at the roundabout.
    - The HCM provides formulas to calculate intersection LOS, which are built into WSDOT approved traffic design softwares SYNCHRO and SIDRA. These softwares were used to calculate the current LOS of the project corridor and intersections, as well as the LOS that will be achieved by this project for the project corridor and intersections.

The signal warrant assessment indicated the SE 253rd Pl intersection did not meet the minimum requirements to warrant traffic lights at existing and future conditions. Therefore, the best allowed intersection control at SE 253rd Pl would be a roundabout. While the side street SE 260th Pl intersection did meet the minimum requirements to warrant traffic lights at future condition, a roundabout was found to provide a better LOS at project opening (2027) and design year (2047). With Alternative A, the worst approach LOS for each of the SE 253rd Pl and SE 260th St intersections will improve from "F" to "A" at the time of project opening. Based on these evaluations and the roundabout benefits stated above, Alternative A was selected as the best alternative to meet project goals and objectives.

7) Why is a signal or roundabout at the school driveway not the preferred option?

This was one of the three alternatives examined, and there is a significant challenge to having a functional roundabout approach or signal with the limited space available at the school parking lot, especially with peak school traffic and school buses.

8) How are big trucks or buses going to turn in the roundabout? There is so much haul truck traffic on SR-169. Will they take up both lanes?

WSDOT and the City have taken into significant consideration the amount and types of truck traffic on SR-169, and it is one of the most important design parameters required for the project. WSDOT requires roundabouts to be designed per design standards for various truck

classifications, as SR-169 is a freight corridor. Truck traffic on this section of SR-169 is approximately 9% of total traffic volumes. Preliminary truck turning simulations show trucks up to a WB-62 (wheelbase of 62 feet) can complete a U-turn movement at each roundabout with WB-67 (wheelbase of 67 feet) being able to navigate the through and turning movements encroaching into two lanes.

WSDOT guidance requires larger trucks to assume straddling both lanes so that the roundabout diameter doesn't grow extremely large. This is also a typical design for a multi-lane roundabout, many of which have been implemented across the state and country.

Trucks will still be moving though the roundabouts slowly and will only cause intermittent slowdowns to traffic flow. Other truck design elements of the roundabouts that are considered in the design are fire trucks, school buses, metro buses, and RV/boat trailers.

9) Can you install lane bumps to discourage quick lane changes?

We will work with WSDOT on an appropriate striping outline that may include raised lane striping or rumble strips.

10) How is access from side streets going to be improved by the roundabouts?

With the widening of SR-169 to 2 lanes, there will be improved capacity, meaning more gaps will be available. Right now, SR-169 has the right-of-way. With a roundabout, all 4 approaches have the right-of-way once you are in the roundabout. If you are making an uncontrolled left turn from a side street onto SR 169 now, you must look at traffic from two directions and time your move to enter either the center turn-lane or the travel lane. With a roundabout, you time your entrance to turn right into the roundabout, looking at traffic in one direction only. Once you find a gap and enter the roundabout, other vehicles must yield to you. The studies completed to date indicate the worst approach LOS at both the SE 253rd Pl and SE 260th St intersections improves from F to A at project completion.

11) We are having a hard time now finding a gap in the SR-169 traffic flow to turn left from side streets crossing one lane, how can we find gaps crossing two lanes at the roundabout? Can we get a dedicated turn lane from the side streets?

Speed limits in this project corridor will be reduced to 35 MPH, and a roundabout is designed specifically so that approaching traffic has to slow down (to below 25 MPH). Therefore, the vehicles approaching the roundabout will be doing so at a lower speed.

The widening will generate more capacity for traffic, which means that there will be more gaps in traffic for vehicles to enter the roundabout. Once you are in the roundabout, outside traffic needs to yield to you. The studies completed to date indicate the worst approach LOS at both the SE 253rd Pl and SE 260th St intersections improves from F to A at project completion. The average delay experienced by side-streets are 9.4 seconds at the SE 253rd Pl intersection and 9.6 seconds at the SE 260th St intersection at project completion.

A dedicated turn lane at SE 253rd Pl is not warranted by the traffic counts and projections per WSDOT design standards, and does not provide a net benefit for the project. It will also increase

the distance that a pedestrian must cross and require additional private properties to be dedicated as right-of-way, which will negatively impact the properties and homeowners at the intersections.

Currently, traffic at the SE 260th St intersection does not warrant a separate dedicated right-turn lane, but future projected traffic will warrant the eastbound right-turn lane. The dedicated eastbound right-turn lane is likely required approximately 20 years into the future with the downtown and Legacy Site developments. The project accounts for a future dedicated right-turn lane from the future downtown core onto southbound SR-169.

12) Is there a "gaps analysis" for a multi-lane roundabout? We have concerns about side street traffic finding the necessary gaps in a multi-lane roundabout where the majority of traffic is coming from the SR-169 flow.

There is no stand-alone gaps analysis. The gaps analysis is embedded in the traffic simulation software (SIDRA) used to design the roundabout and calculate traffic parameters (such as minor street anticipated delays). The studies completed to date indicate the worst approach LOS at both the SE 253rd Pl and SE 260th St intersections improves from F to A at project completion. The average delay experienced by side-streets are 9.4 seconds at the SE 253rd Pl intersection and 9.6 seconds at the SE 260th St intersection at project completion.

13) How is safety going to be improved?

The key safety improvements are:

- No uncontrolled left turns from SE 253rd Pl and SE 260th St side streets, Rock Creek Elementary School, and Farmer's Market.
- Roundabouts decrease vehicle operating speeds and allow for 4-way right-of-way (oncoming traffic must yield to traffic already in the roundabout).
- Speed limit reduced along the project limit to 35 MPH.
- Dedicated pedestrian crossings with rectangular rapid flashing beacons (RRFBs), wider sidewalks, bike lanes.
- Improved capacity along the corridor and randomization of traffic flow from the implementation of additional travel lanes and roundabouts, leading to more gaps in traffic.
- Improve ingress/egress and safety from side streets and driveways accessing SR 169.

14) Can I make a U-turn in a roundabout? Is it safe?

Yes, regular vehicles and even trucks hauling boats or trailers can make a U-turn safely in a roundabout. That is one of the benefits of a roundabout, is to make the process of making a U-turn safer and more efficient.

15) How is the roundabout going to improve pedestrian crossing?

There will be RRFB with pedestrian crossing warning signage at the crossings on SR-169 at both intersections going east/west, and a center island for these crossings so pedestrians do not need to

cross all 4 lanes at once. You can pause at the center island and assess the situation before crossing the final 2 lanes. The design of the roundabout will physically slow down the traffic approaching the crosswalk and entering the roundabout. Pedestrian crossings going north/south at SE 253rd Pl and SE 260th St are currently not planned to include RRFBs because of low traffic volumes on side streets.

16) What will the transition to one lane each direction look like, and how will that impact traffic?

An appropriate merge lane will be provided so the 2 lane traffic transitions back down to 1 lane. Based on the traffic analysis, there should be no issues with the transition from 2 lanes to 1 lane. The project design will provide for the merge lane with appropriate length so merges can occur safely.

17) Why is there a median curb going through the entire length of the corridor? Can there be a lowered section of the median island that is traversable by emergency vehicles?

By installing a median curb at this stretch of road, we prevent vehicles from making uncontrolled left turns onto SR-169 from side roads such as the school and the Farmer's Market. Removing the ability for vehicles to make this high-risk turn greatly improves the safety for this corridor. Vehicles will make a U-turn at either the SE 253rd Pl or SE 260th St roundabouts, except for emergency vehicles.

The median curb will be designed to allow for emergency vehicles to cross over at specific locations into Rock Creek Elementary School or the Farmer's Market/Legacy Site so that emergency vehicles do not need to travel further to a roundabout to make U-turns.

18) Do traffic volume/traffic capacity projections account for vehicles making U-turn movements in the roundabouts?

Traffic capacity is a function of the number of lanes, travel speed, and assumptions on the spacing between vehicles. Projected traffic volume and subsequent LOS calculations do consider the U-turn movements in roundabouts. For example, a current vehicle traveling northbound and turning left into the Farmer's Market will need to proceed further north and complete a U-turn movement with the new design. Such movements are captured in the traffic volume projections.

19) What about noise mitigation? Did you do a noise study?

A noise study will be completed per WSDOT standards as part of this project. Noise studies take into consideration the 20-year projected future traffic volumes in the noise level analysis (2047 for this project). If the noise study indicates that noise mitigation measures must be implemented, noise walls and other noise mitigation measures will be evaluated based on feasibility and reasonableness.

As part of the design consideration to reduce traffic noise impacts, we looked into noise abatement measures such as reducing travel lane and overall roadway widths, reducing overall traffic speeds, providing wider sidewalks and wider planter strips with street trees to maintain wider physical separations between traffic and adjacent properties, and which road surface material to use. Roundabouts would also help minimize stop and go traffic noises at

intersections.

20) What impacts can we expect on private property? Can you consider shifting the layout to reduce impacts to properties at the intersections?

At this stage of the project, we do not know for certain the impacts to individual properties. We will work with each landowner individually on what impacts to their property this project may have.

The current cross-section design indicates the majority of the road between the intersections will be in the existing right-of-way. The roundabout intersections need more right-of-way dedication and we have been working with the individual landowners and homeowner associations on the project design and potential right-of-way impacts. It is our goal to minimize impacts to adjacent properties as best as we can.

21) Are there going to be bus stops and how are they positioned? Will buses impact our ability to see oncoming traffic and get into the roundabout?

We are working with King County Metro to determine the locations of bus stops. There will not be dedicated pullouts for buses. The bus stops will need to be set a certain distance away from the roundabout intersections to provide the appropriate sight distances needed to ensure public safety.

The latest discussions indicated:

SE 253rd Pl – bus stop locations on SR-169 will be located just south of the SE 253rd Pl intersection, adjacent to crosswalks.

SE 260th St – the northbound station will be located north of intersection; southbound station will be located south of intersection.

22) What's going to happen to the trees and fences along the corridor?

It is still too early to determine what effects this project may have on neighboring properties, but we have every intention to work with each landowner individually on what impacts to their property this project may have.

The current cross-section design indicates the majority of the road between the intersections will be in the existing right-of-way. The roundabout intersections need more right-of-way dedication.

23) What is going to happen to the existing overhead utilities?

It is still early in the process, and we do not know if it is feasible to underground all utilities. The current plan is to either relocate or underground overhead power and communication lines for this project corridor.

24) How is stormwater going to be controlled from the project?

Preliminary geotechnical studies indicated the soils beneath the proposed project corridor

infiltrate readily. Stormwater will likely be routed to retention facilities and infiltrated into the ground.

25) How will this project improve congestion and ingress/egress during school/peak traffic hours and during the Farmer's Market?

The City has been working closely with the TSD on the design, and we have suggested some additional improvements at the school property. These include an eastbound dual lane queuing storage lane, adding separated right-turn lanes, and removing uncontrolled left turns from the school property. The improvements intend to remove the queuing and backup that occurs at the school during drop off/pickup. The City is also evaluating options for additional ingress/egress from the Farmer's Market site.

26) Are there going to be two entrances and one exit to the Farmer's Market? Consider having two entrances and two exits.

It is still early at this point in the project process. We will provide entrances and exits consistent with the City's master plan for the Legacy Site.

27) Would school buses and/or traffic turning right from school driveways be able to merge into the inside NB lane to make a U-turn at the SE 253rd roundabout?

The widening of the road and removal of uncontrolled left turns will provide more gaps and less safety risks for school buses and vehicles exiting from the school to merge into the inside NB lane. The design analysis will ensure school buses are able to safely turn, merge, and make U-turns at the roundabouts.

28) Instead of using the area south of the TSD offices and Rock Creek Elementary School parking lot, can you install the queuing lane at Rock Creek Elementary School further north, where the current school bus lanes are located?

We have been working with TSD as one of the primary stakeholders of this project since the beginning of the project and the queuing lanes as outlined were a result of that cooperative process. TSD wishes to keep school bus traffic and vehicle traffic separate to reduce the amount of potential pedestrian/vehicle conflict points.

29) Can you extend the queuing lane at Rock Creek Elementary School further east to exit onto 242nd Place?

This was under consideration at one point. However, extending the lane further east to connect to 242nd place will direct vehicular traffic into residential neighborhoods, which can increase in the amount of potential pedestrian/vehicle conflict points from students walking to/from school.

30) Regarding the two-lane queuing lane south of Rock Creek Elementary School, will the existing paved path be preserved?

The paved path will be preserved where able, but pedestrian sidewalks will also be installed to accommodate the queuing lane for pedestrian access.

31) Why is the planter strip separating the bike lane from the pedestrian lane? Does it make more sense to have a larger non-motorized lane for both bike and pedestrian traffic, and separate that lane from the motorized traffic by a bike lane?

The idea behind the separate bike/pedestrian lane is to provide commuter bikers with an exclusive, separated bike lane for use. This is intended to reduce the amount of potential conflict points between bikes and pedestrian activity. We are anticipating the sidewalks is this area will be heavily used by pedestrians as it is in front of the school and Farmer's Market. Some bikes can travel upwards of 20-25 MPH, and having a physical planter strip between the two lanes will help to reduce conflict points (for example, a dog on a leash or a child unknowingly venturing into the bike lane) and protect pedestrian safety.

The pedestrian sidewalk **can** also be used for bikes. Recreational or inexperienced bikers **can** use the pedestrian lane for biking. The 8-10 feet wide pedestrian lane is designed to be wider in order to accommodate such traffic.

32) Will there be flashing school zone signs?

It is still early at this point in the project process. We will work with TSD and WSDOT to determine if a school zone needs to be implemented in front of Rock Creek Elementary School.

33) Is the pedestrian bridge part of this project? If not, what is the status on the project?

It is not a part of this project, but it is high on the list of capital improvement projects that the City is working on. The project is anticipated to receive $5M grant funding from the State. The schedule depends on when the fund becomes available. We hope that the design may start as soon as end of 2023.

34) Instead of a pedestrian bridge, can you look at a tunnel? A bridge will obstruct the view of Mt. Rainier.

A tunnel would attract more public safety and vandalism concerns. The goal of the pedestrian bridge is to provide a visible, connective space for communities on the east and west sides of SR-169. A view of Mt. Rainier is desired to be protected, but the road curvature and existing trees already limit views on southbound SR-169. Aesthetics of the pedestrian bridge will be one of the main design elements of the bridge project.

35) Can you decrease the speed limit along the entire stretch of SR-169 from SE 260th St to SE 240th now, so people can get used to the lower speed limit?

Speed limits along SR-169 are established by WSDOT. For this project, the speed limit within the project limit will be reduced to 35 MPH. The City has been working with WSDOT on evaluating the feasibility of reducing the speed limit along the SR 169 corridor and will continue that effort.

36) Have you considered adding flashing speed limit and/or radar signs to help with speed reduction?

As part of this project, the City will look into speed management options such as flashing speed

limit signs or radar signs to help with speed reduction.

37) Can you move and/or install more speed limit signs along SR 169?

The City will work with WSDOT on potentially moving speed limit signs/adding speed limit signs as part of this project to help with speed reduction.

38) Is it a good idea to add a merge lane for school buses coming out of Rock Creek Elementary School?

With the widening of SR-169 from one-lane to two-lanes, there will be additional gaps for a school bus to enter onto SR-169. A merge lane for school buses would shorten distances for buses to merge across two travel lanes for U-turns at the roundabout, and it does not provide a net benefit but would cause significant impacts to properties along the east side of SR-169.

39) How far built-out is the Ten Trails development? Does the design account for further development in Maple Valley and the surrounding areas?

The City maintains consistent contact with the Ten Trails developer and the most recent numbers indicate approximately 1,000 out of 6,000 units are built.

The traffic volumes used for the design account for additional growth in the region. Future traffic volume projections are based on the citywide long-range travel forecasting model, which include future development growths within the City as well as regional growths outside of the City in the southeast King County areas (provided by Puget Sound Regional Council).

40) Can you limit the height of the center of the roundabout to preserve sight lines?

It is still early at this point in the project process. We will work with WSDOT on acceptable designs for the roundabout island.

41) What is the illumination plan? Consider placing taller streetlights on the west side of SR-169 to prevent interference with view of Mt. Rainier.

It is still early at this point in the project process. We will work with WSDOT on an acceptable illumination plan. We must maintain adequate lighting and safety for commuters and pedestrians.

42) Can RRFBs be added to side streets at the intersections?

We will determine if RRFBs on the side streets provide a net benefit to pedestrian safety based on side street traffic volumes.

43) Will there be any roadway safety pull-out locations for stalled vehicles?

No pull-outs are anticipated. This is a fairly short project length and there are locations to pull off the road into driveways and side streets. The additional lane widening will also allow for traffic to get around any stalled vehicles until help arrives.

44) Will the roundabout driving surfaces be hot-mix asphalt (HMA) or precast prestressed concrete pavement (PPCP)?

The roadways are designed to be hot-mix asphalt (HMA) to match the existing SR-169 roadway surfaces.

45) Is there going to be a roundabout at the Belmont Woods exit (SR-169 and SE 244th St)

The T45 project does not include this intersection. This intersection will be evaluated and addressed during the T36 project, which has not yet started the design process.

Please contact Joseph Xi at joseph.xi@maplevalleywa.gov or 425-358-1745 for any questions or comments, or if you are interested in further understanding the project.